

Claims

What is claimed is:

1. A method of displaying positional information for a work machine, comprising:
  - displaying a terrain map indicative of a current surface configuration for a geographic location, the display of the terrain map including a plurality of elevation segments, each of the plurality of elevation segments having an actual surface elevation value for a discrete area of the geographic location;
  - monitoring a position of a ground engaging tool operatively connected to the work machine;
  - identifying a current elevation of the ground engaging tool; and
  - updating the display of the elevation segment corresponding to the location of the ground engaging tool when the current elevation of the ground engaging tool indicates a change in the actual surface elevation value for the elevation segment corresponding to the location of the ground engaging tool.
2. The method of claim 1, further including updating the display of the elevation segment corresponding to the location of the ground engaging tool when the current elevation of the ground engaging tool is less than the actual surface elevation value for the elevation segment corresponding to the location of the ground engaging tool.
3. The method of claim 1, further including:
  - identifying a desired surface configuration for the geographic location; and
  - displaying a representation of the desired surface configuration.

4. The method of claim 3, further including displaying a representation of the current position of the ground engaging tool relative to the desired surface configuration.

5. The method of claim 1, further including updating the display of the elevation segment corresponding to the location of the ground engaging tool when a sensor operatively associated with the ground engaging tool indicates that the ground engaging tool is engaged with the surface level of the geographic location.

6. The method of claim 1, further including resetting the actual surface elevation value for at least one of the plurality of elevation segments when the corresponding discrete area of the geographic location is backfilled.

7. The method of claim 1, wherein the terrain map represents a portion of the geographic location within a reach of the ground engaging tool.

8. A display system for a work machine having a ground engaging tool, comprising:

a position sensing system adapted to provide an indication of a current position of the ground engaging tool;

a display device adapted to display a terrain map indicative of a current surface configuration for a geographic location, the display of the terrain map including a plurality of elevation segments, each of the plurality of elevation segments having an actual surface elevation value for a discrete area of the geographic location; and

a control operable to determine a current elevation of the ground engaging tool and to update the display of the elevation segment corresponding to the location of the ground engaging tool when the current elevation of the ground

engaging tool indicates a change in the actual surface elevation value for the elevation segment corresponding to the location of the ground engaging tool.

9. The display system of claim 8, wherein the control includes a memory adapted to store a desired surface configuration for the geographic location.

10. The display system of claim 9, wherein the display device displays a representation of the desired surface configuration.

11. The display system of claim 10, wherein the display device displays a representation of the current position of the ground engaging device relative to the desired surface configuration.

12. The display system of claim 8, wherein the position sensing system includes a series of sensors operatively connected to the ground engaging tool.

13. The display system of claim 8, wherein the control is further adapted to reset the actual surface elevation value for one of the plurality of elevation segments when the corresponding discrete area of the geographic location is backfilled.

14. A work machine, comprising:  
a traction device;  
a housing mounted on the traction device;  
a ground engaging tool;  
a position sensing system operatively connected to the ground engaging tool and adapted to provide an indication of a current position of the ground engaging tool;  
a display device adapted to display a terrain map indicative of a current surface configuration for a geographic location, the display of the terrain

map including a plurality of elevation segments, each of the plurality of elevation segments having an actual surface elevation value for a discrete area of the geographic location; and

a control operable to determine a current elevation of the ground engaging tool and to update the display of the elevation segment corresponding to the location of the ground engaging tool when the current elevation of the ground engaging tool indicates a change in the actual surface elevation value for the elevation segment corresponding to the location of the ground engaging tool.

15. The work machine of claim 14, wherein the control includes a memory adapted to store a desired surface configuration for the geographic location.

16. The work machine of claim 15, wherein the display device displays a representation of the desired surface configuration.

17. The work machine of claim 16, wherein the display device displays a representation of the current position of the ground engaging device relative to the desired surface configuration.

18. The work machine of claim 14, wherein the control is further adapted to reset the actual surface elevation value for one of the plurality of elevation segments when the corresponding discrete area of the geographic location is backfilled.

19. The work machine of claim 14, further including a work implement linkage operatively supporting the ground engaging tool.

20. The work machine of claim 19, further including a swing assembly configured to pivot the work implement linkage relative to a vertical axis and wherein the work implement linkage includes, a stick operatively mounting the ground engaging tool, and a boom operatively supporting the stick,

and wherein the position sensing system includes at least one sensor operatively connected to the ground engaging tool, the stick, the boom, and the swing assembly.

21. A display system for a work machine including a ground engaging tool, comprising:

a sensing means for sensing a current position of the ground engaging tool;

a display means for displaying a terrain map indicative of a current surface configuration for a geographic location, the display of the terrain map including a plurality of elevation segments, each of the plurality of elevation segments having an actual surface elevation value for a discrete area of the geographic location; and

a control means for determining a current elevation of the ground engaging tool when the ground engaging tool is positioned at a surface level of the geographic location and for updating the display of the elevation segment corresponding to the location of the ground engaging tool when the current elevation of the ground engaging tool indicates a change in the actual surface elevation value for the elevation segment corresponding to the location of the ground engaging tool.